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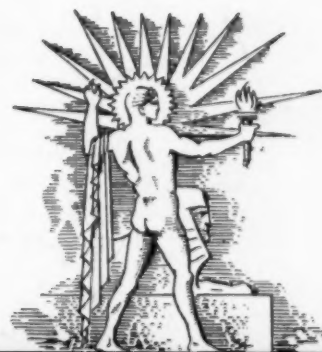
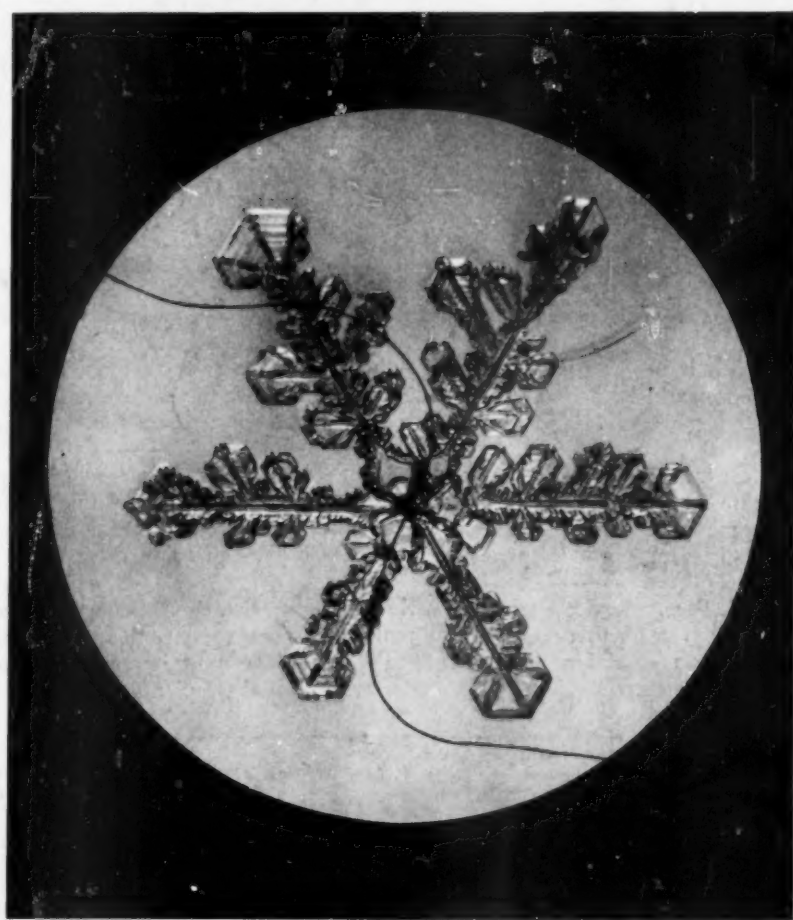
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JAN 21 1939
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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



January 21, 1939

Laboratory Product

See Page 38

A SCIENCE SERVICE PUBLICATION

Do You Know?

Whooping cough has been known to occur in babies a day old, and in individuals of 80 years.

More than 7,000 young men are training to become aviation mechanics in Federally aided vocational schools and classes.

An Italian archaeologist reports finding a fragment of a poem by Sappho among 12,000 papyrus writings discovered in Egypt.

Scientists in India have proposed using more of the waste molasses from India's sugar industry to provide fertilizer for the soil.

Ancient Greeks named ticks after croton seeds, while the Romans called them after the castor bean; ticks resemble both these seeds in appearance.

Several scientists who have measured skeletons of four African pygmies report that smaller skulls are found among both primitive and white people.

To show how anesthetics deaden pain, a full-sized mechanized model of a man will be shown on an operating table at the New York World's Fair medical exhibit.

A family of skunk kittens play near the home of a National Park Service employee in New Mexico, and he says they "do everything that the progeny of a house cat would do."

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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What are the advantages of paper for gas masks? p. 40.

Hospitals in one state alone—Pennsylvania—spend about a million dollars a year on anesthesia.

The U. S. Bureau of Mines has patented a process for producing 99.7 per cent. pure manganese metal from low-grade domestic ores.

U. S. Forest Service engineers worked nearly two years to develop a sled-pulling snow tractor for use in Oregon's Cascade Range.

A huge river that flows about half a mile under the surface of the Pacific has been discovered off the California coast.

A promising source of camphor has been found in the Anglo-Egyptian Sudan, in ocimum oil obtained from leaves of a plant growing there.

The British Museum has acquired a collection of more than 14,000 ferns, said to be the most important private collection of these plants.

SCIENCE NEWS LETTER

Vol. 35 JANUARY 21, 1939 No. 3

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 2101 Constitution Avenue, Washington, D. C. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years \$7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

Members of the American Association for the Advancement of Science have privilege of subscribing to SCIENCE NEWS LETTER at the reduced price of \$3 per year. Applications for this privilege should be accompanied by privilege card obtained from the Permanent Secretary, A.A.A.S., Smithsonian Institution Building, Washington, D. C.

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Cable address: Scienserve, Washington.

Entered as second class matter at the post-office at Washington, D. C., under the act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark. U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature and in the Engineering Index.

Advertising rates on application. Member Audit Bureau of Circulation.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation, with trustees nominated by the National Academy of Sciences, the National Research Council, the American Association for the Advancement of Science, the E. W. Scripps Estate and the journalistic profession.

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PHYSICS

"Plating" With Thin Films Makes Glass More Transparent

Fluorine Compounds and Insoluble Soaps Make
Reflected Light Cancel Itself by Interference

SHOW windows may in future become invisible, and camera lenses and filters may let through more light, as a result of the discovery that the addition of a thin surface film will make glass more transparent.

At first sight it seems impossible that the placement of anything on a transparent optical surface, be it a film ever so thin, could possibly increase the transmission properties of the glass surface. Yet from two independent sources and from highly reputable laboratories have come announcements of such a scientific discovery.

At the meetings of the American Physical Society Drs. C. Hawley Cartwright and A. Francis Turner of Massachusetts Institute of Technology described their method of evaporating on to glass surfaces thin films of fluorine compounds which make light reflected from glass surface cancel itself out by destructive interference. The light energy thus eliminated in reflection appears as increased energy in the transmitted beam and transmissions of 99.6 per cent were reported.

On the day previous to the M. I. T. report, Dr. Katherine B. Blodgett of General Electric's Schenectady research laboratory announced essentially the same optical feat by the use of monomolecular films of insoluble soaps; films with which she and Dr. Irving Langmuir have long worked in studies of intermolecular forces. Her films are obtained, not by evaporation of materials in a vacuum, but by dipping of the glass plates in the thin-film solutions.

.000004 Inch

The secret of both the M. I. T. and G. E. achievement is the application of films to both surfaces of glass which have a thickness of one-quarter a wavelength of light. In more common units of length the film thickness is about four millionths of an inch.

Such thin films are themselves invisible and can only be seen, in slightly greater thickness as the brilliant colored patterns which they produce by inter-

ference. Oil films on mud puddles are examples.

Potential uses of the films are in all places where reflection from glass would be undesirable and where light losses, due to reflection, are unwanted.

Show windows, cover glasses on pictures and elaborate "trains" of optical parts in telescopes and periscopes are places of immediate application. In some cameras three or four lenses are used, the surfaces of each of which reflect appreciable amounts of valuable light. In some cases the light losses amount to 25 per cent. In some periscopes losses of light by reflection from the many optical parts amounts to 75 per cent.

Almost Perfect

In tests at G. E. the transmission of a piece of glass was increased from 92 to 99.2 per cent. by the application of the film.

Major interest of scientists in the new films lies in the unanswered question of their permanence. One suggestion is that while they may not last long enough to make them permanently useful on the outer surfaces of elaborate "trains" of lenses it might be possible to employ them on inner, protected surfaces.

Science News Letter, January 21, 1939

MEDICINE

New Chapter in Germ Hunt Now Being Written

A NEW chapter in germ-hunting is being written. It may solve the mystery of the outbreaks of infectious, sometimes fatal diarrhea among new-born infants which have recently occurred in hospitals in various American cities, to the consternation of doctors, health authorities and hospital superintendents no less than parents.

This particular chapter on germ-hunting goes back to 1934 when there was an outbreak of food poisoning among American soldiers in Panama.

Blood cultures from these soldiers were sent to a Danish authority, Dr. F. Kauffmann in Copenhagen, who was able



AVOIDS REFLECTIONS

The strip in the center shows how addition of the film prevents the glass from sending reflections into the eye of the camera. The portrait is of Dr. W. R. Whitney, vice-president of the General Electric Company.

to identify the offending bacterium as belonging to the paratyphoid or *Salmonella* group. Because the organism had distinct serologic characters, it was declared a new type and was listed as *Salmonella panama*.

Salmonella panama has now shown up in New York City where five babies seriously ill with diarrhea were found infected by this specific bacterium. Two of them died.

Dr. Fritz Schiff reported the occurrence of *Salmonella panama* in New York to the American Medical Association.

No conclusions as to the frequency of the organism in New York or elsewhere in the United States can be drawn from such limited material, Dr. Schiff stated. The five cases he reported occurred in succeeding years, 1936, 1937 and 1938.

Dr. Schiff believes that some of the recent outbreaks of infectious diarrhea in infants may have been caused by this Panama germ.

One of the New York babies probably became infected from its mother.

However, in this instance as well as in the other cases, the question of suspicious food could not be studied, for when the bacteriologic diagnosis revealed the true nature of the disease it was too late to study the food.

Science News Letter, January 21, 1939

Avocado oil is used in soap making on a limited scale in Guatemala.

PSYCHOLOGY—SOCIOLOGY

"How to Sell a War In Three Easy Lessons"

Files of Creel's Committee on Public Information Made Public After 20 Years; Governed Censorship

WANT to sell anyone a war? Word on how to do it, as it was actually done by one World War agency, has at last come out. The files of the Committee on Public Information, George R. Creel's censorship and super-sales organization, have finally come to light after lying lost for nearly 20 years.

Discovered two years ago in the basement of the old War Department building in Washington, the files are now, under the searching examination of Dr. James R. Mock and Cedric Larsen of Princeton, being made to yield up their mountains of data.

The files might almost be said to furnish a model for the propaganda machine that will be set to work on the next M-Day, when and if mobilization comes. Certainly such a machine is considered a necessity among the men charged with planning America's national defense.

First publication of material contained in the files, much of it never made public before, is in the *Public Opinion Quarterly* (January), published by the School of Public Affairs at Princeton.

Revealing details on the subtle methods used by Mr. Creel and his aides in getting recalcitrant newspapers into line; how they sold America to the Allies; how Mr. Creel, one of the most bitterly attacked wartime American leaders during the war, handled his opponents; and on how the committee sold the war to America itself, are contained in the recovered filing cases.

Reached Public

Despite the attacks on Mr. Creel, particularly when the organization was first launched, as the alleged dictator of the press, his organization was able to secure 20,000 columns of news a week. Articles were checked and rechecked, and while more than 6,000 were issued in the year and a half this super-propaganda machine operated, Mr. Creel claims that only three were ever questioned.

A measure of the stupendous size of the committee's activities can be gleaned from the fact that 75,000,000 pieces of

literature were issued. Five million copies of President Wilson's Flag Day address were distributed by the Boy Scouts alone. One of the chief techniques used by the Committee on Public Information, it is indicated, was securing the cooperation of large public service organizations such as the Boy Scouts.

Communiqués from Pershing, interviews with military, naval and civil leaders, and casualty lists constituted the chief types of material handed out. A weekly digest of war news for country and weekly newspapers, which then reached even a larger portion of the American public than they do now, was later added.

The committee was the chief medium for the issuance of news by the Depart-

ments of War, Navy, Justice, Labor, the White House, National War Labor Board, Council of National Defense, War Industries Board, War Trade Board and the Alien Property Custodian.

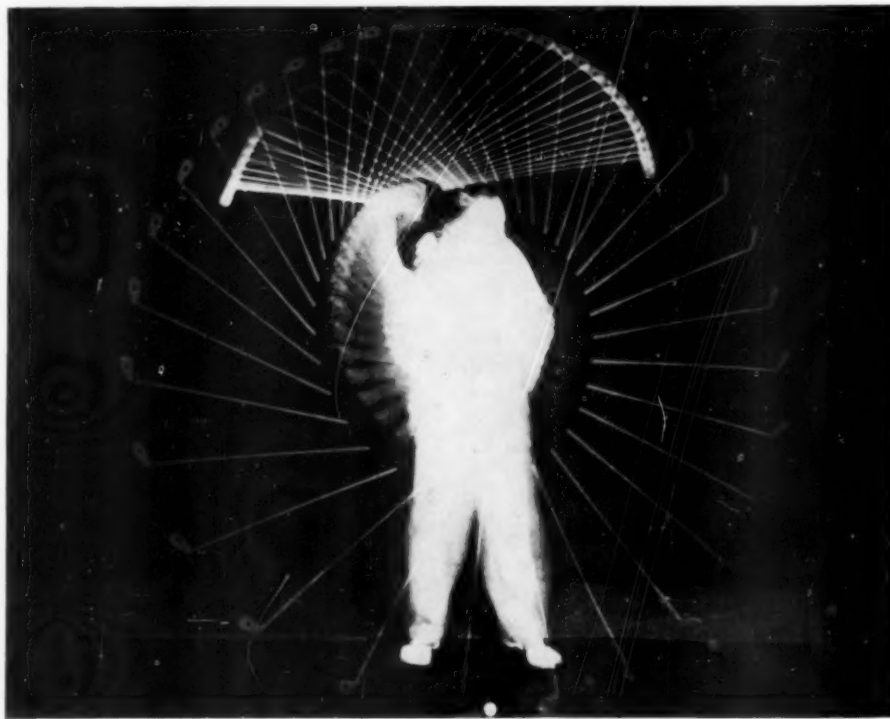
Under the committee's auspices, 75,000 Four-Minute-Men speakers reached an estimated audience of 200,000,000 people. Photographs taken by the Army Signal Corps were used; they were "possessed of the very highest propaganda value." Beginning May 10, 1917, an official bulletin was issued daily. Its peak circulation, reached in August, 1918, was 118,000.

Compub

America's message was spread systematically throughout the length and breadth of the Allied nations by a wireless and cable service, known as Compub. The major news services cooperated in the enterprise. A mail feature service sent abroad feature items, news, weekly letters by well-known writers, photographs, cuts and mats. Virtually every country in the world was reached.

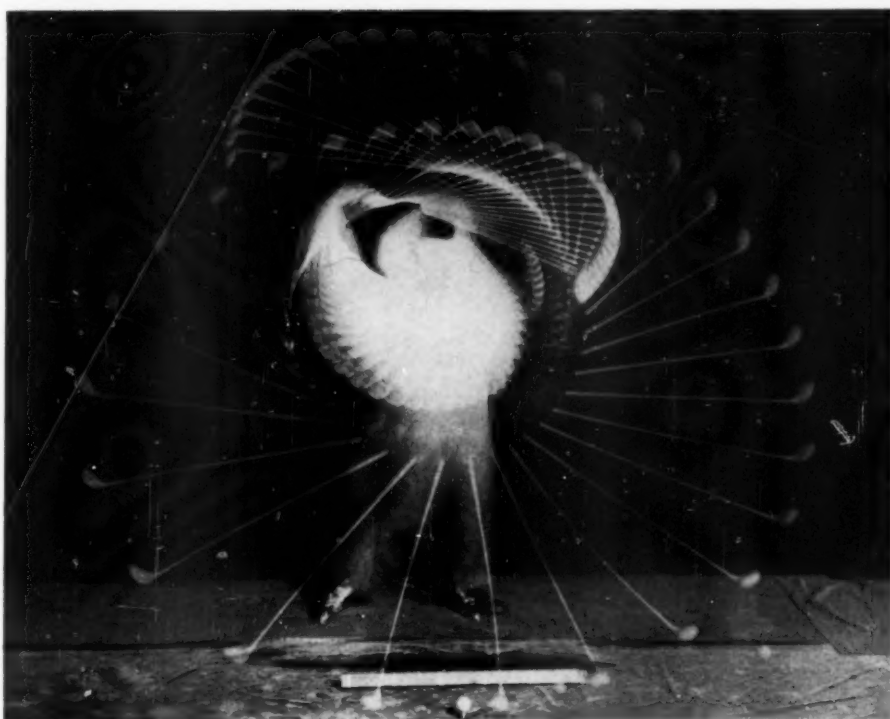
In its censorship activities, the CPI (America had a passion for initials, even then) distinguished among three categories of news:

1. Matters which must not be men-



PATTERN OF GOLF

A multiple-flash photograph of the swing of a golf club as made by an ordinary golfer. The picture was taken in the new research laboratory of A. G. Spalding and Bros. with the speed photography technique developed by Prof. Harold Edgerton and K. J. Germeshausen of Massachusetts Institute of Technology. Note the trace of the ball as it flew outward.



SWING OF BOBBY BURNS

This picture, made with a longer, wooden golf club shows how much flatter is the golf swing than is the view, on the opposite page, of the swing of an iron. This photograph showed that: ball velocity is 225 feet a second, club velocity before impact is 166 feet a second, club velocity after impact is 114 feet a second.

tioned in print. These included ship and troop movements, location of mine fields, photographs of harbor defenses and the like.

2. Matters of doubtful nature which must be passed on first by the committee. For example, Army and Navy units might be described if nothing of use to the enemy was contained in the description.

3. Matters unrelated to the war.

No such hard-and-fast censorship as characterizes many lands today was ever laid down by the committee. Rather Mr. Creel appeared to depend on his powers of persuasion to keep newspapers in line. Dr. Mock and Mr. Larsen and history as well testify that he succeeded.

Science News Letter, January 21, 1939

PUBLIC HEALTH

Warns Against Poison Hazard In Rayon Manufacture

Carbon Disulfide Poisoning Causes Emotional Upsets, Loss of Memory, Mania, as Well as Physical Symptoms

WARNING that carbon disulfide poisoning threatens the mental and physical health of workers in certain departments of rayon factories appears in the *Journal of the American Medical Association*. (Jan. 7)

More than 50,000 Americans are now engaged in this trade, but not all are ex-

posed to the hazard of carbon disulfide poisoning. Facts about this particular industrial health hazard were uncovered in an examination, by specialists of the University of Pennsylvania School of Medicine, of 120 men employed in Pennsylvania factories where the artificial silk is made.

Three-fourths of the men examined showed early symptoms of the toxic effects of carbon disulfide, the poison used in the manufacturing process.

The men were employed at the time of examination in the two departments in which carbon disulfide is present in greatest quantity. Here are some of the symptoms found:

More than 70 per cent. showed psychic disturbances varying from extreme insomnia to uncontrollable anger with rapid changes of mood, marked memory defects and in some instances psychoses, usually of maniacal type. Loss of sexual desire was found in 75 per cent. of the men under 45 years of age.

Seventy-five per cent. of the men suffered pain that was followed later by weakness and partial paralysis.

Fifty-four per cent. showed disturbances of the eye; 71 per cent. showed impaired hearing.

In severe cases of carbon disulfide poisoning, such as have been frequently reported in the medical literature from abroad, paralyzes develop, there is temporary blindness, perhaps acute hallucinatory psychoses, impotence, emaciation and cachexia.

The *A.M.A. Journal* calls the attention of physicians to a bulletin, issued by the Pennsylvania Department of Labor and Industry, which gives the facts uncovered in the story.

Science News Letter, January 21, 1939

BIOLOGY

Man's Egotism Shattered by Life's Thin Film on Earth

ONE of the most important philosophical consequences of the rise of science through the centuries is the demolition of the man-centered universe. Copernicus dethroned the earth as the center of the universe. Darwin made man take his rightful place in the grand procession of natural evolution.

Ego-centered man, so powerful in shaping the things of the earth to his own ends, needs to be reminded occasionally of his role in space and time. The earth, so far as we are sure the only oasis of life in the myriad of stars and nebulae, is a minor satellite of a mediocre star, remarkable only because we chance to be on it.

And life is by no means a function of the whole earth. Dr. Oscar Riddle, Carnegie Institution biologist, has described the kind of world picture as interpreted by the life sciences that he feels our schools should present.

"The drama of life," Dr. Riddle says,

"is performed in a very restricted zone—quite near to the very surface of our small planet. Even bacteria are known to disappear in the upper reaches of the atmosphere, and other life extends downward only to the limits set by the ocean depths. At no earlier time in the earth's history does this seem to have been different. Fossil remains of living things are found in coal and rock strata now some thousands of feet beneath the soil on which we walk, but it is clear that these veins were land surfaces or ocean floors when they trapped the dead bodies of organisms.

"If, in an Arabian Night's excursion, we might leave the earth and look at the present living world from afar—say, from the 24,000 miles which is one-tenth of the distance to the moon—we could rightly sense the narrow pinions of life. Then, on the great sphere which would nearly fill our view to east or west, we should see all life imprisoned in a thin film—a living skin—tightly fitted to the very surface of the earth. As we now know it the entire story of life sticks to the place where there is liquid water, with earthly salts dissolved in it; where gaseous oxygen, carbon dioxide and nitrogen abound; and where surfaces can absorb sunlight for a continuous flow of free energy."

Science News Letter, January 21, 1939

PHYSICS

Fluffiest Snow Known Reported From Blue Hill

WHAT is believed to be the fluffiest snow on scientific record is reported by Prof. C. F. Brooks of Harvard University.

It fell at Milton, Mass., where Harvard's meteorological station, the Blue Hill Observatory, is located. There was only half an inch of it, and it took three hours for it to accumulate, for the flakes fell very slowly—less than two feet per second.

Prof. Brooks blocked out a square yard of it, as it lay on the hard crust of an earlier snow. He packed it into snowballs and weighed it. He found that the water equivalent was only $1/63$; that is, it would have required 63 inches of this snow to make one inch of water. Ordinary snow has a water equivalent averaging $1/10$, and the fluffiest snows commonly observed range from $1/20$ to $1/30$.

Prof. Brooks, through the *Bulletin of the American Meteorological Society*, (Nov. 1938), asks if any one has ever made an accurate observation of snow any fluffier than his downy $1/63$ variety.

Science News Letter, January 21, 1939

PHYSICS—PHOTOGRAPHY

Nature's Jewels, Snowflakes, Are Copied in the Laboratory

Japanese Scientist Creates Lovely Water Crystals For the First Time By Imitating Natural Conditions

See Front Cover

SNOWFLAKES have fallen in uncountable, unimaginable billions since winter first came to the earth. The bounty of nature in these miniature pearly stars has been unlimited. Now, however, they are being made "synthetically" for the first time.

In an unheated, shed-like board building, Prof. Ukutiro Nakaya of Hokkaido University, Sapporo, Japan, makes snow crystals to order, producing them either "plain" or "fancy" as he desires. He measures, photographs, and studies them for the information they can yield in the solution of baffling puzzles in meteorology, the science of the weather.

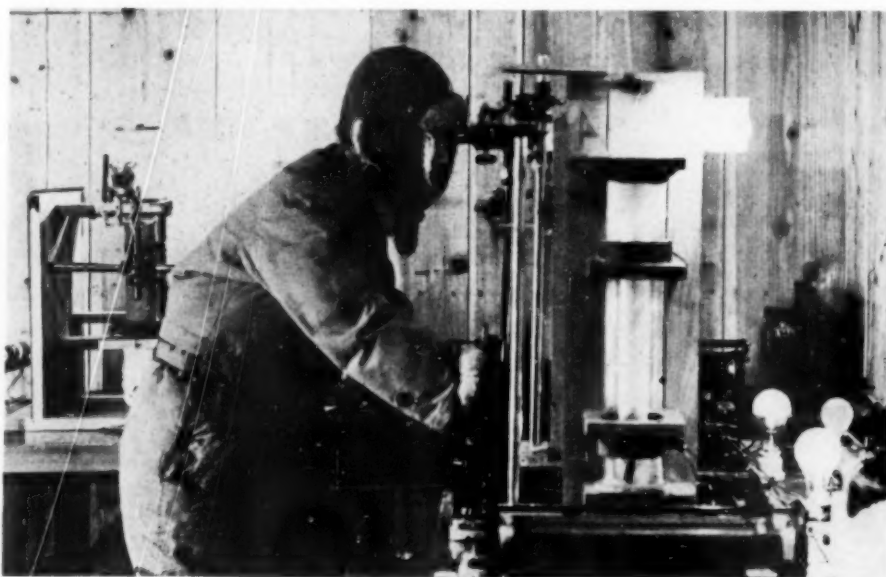
It gets cold in Sapporo. That city is the northernmost of the more important Japanese centers of population, and is in about the same latitude as Vladivostok. So Prof. Nakaya wears a fur-lined aviator's suit while he is at work.

The Japanese physicist makes snow-

flakes that rival the natural product by imitating the method of nature as closely as can be done in less space than the whole sky. To make a snowflake, three things are necessary; a supply of moist air, some small solid object on which condensation can start, and a relatively quick drop in temperature to set the process going.

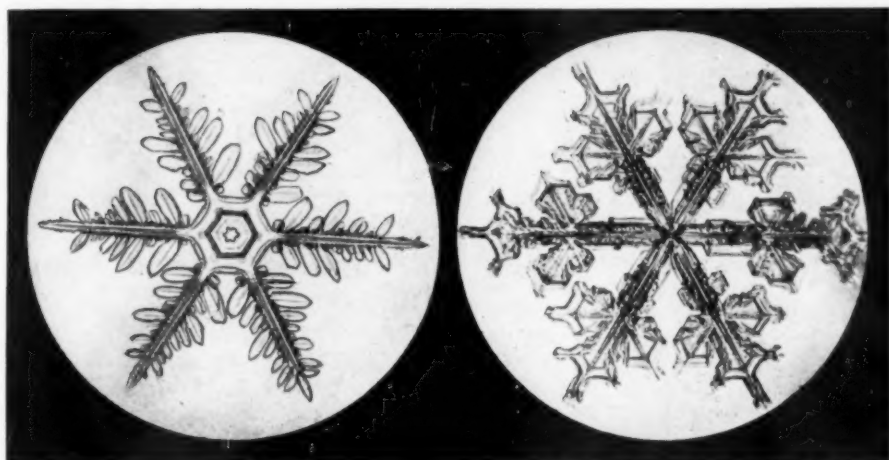
Prof. Nakaya provides the moist air by heating a vessel of water with an electric coil. The warm, saturated air rises through a chimney-like glass tube. This is enclosed within a larger glass tube, which continues above the end of the chimney into a cold chamber, where the temperature can be pushed down to 60 degrees below zero Fahrenheit.

Under natural conditions the tiny solid particles on which snow crystals start to condense are microscopic dust grains, salt particles, etc., floating in the atmosphere. To hold his synthetic snow crystals still, so they will "stay put" while he observes and measures them, Prof. Nakaya



MAKER OF SNOWFLAKES

Prof. Ukutiro Nakaya of Hokkaido University peers through a horizontal microscope at a crystal forming in the cold chamber of the apparatus before him. Since the laboratory must be kept unheated, the Japanese physicist wears a fur-lined flying suit.



NATURE'S JEWELS

These snow crystals photographed by Prof. Nakaya are products of a natural snowstorm. The one on the front cover of this week's SCIENCE NEWS LETTER is a laboratory product—note the curving rabbit hair on which it was formed.

hangs a single rabbit hair in the cold chamber at the top of his glass cylinder. When the saturated air from below is suddenly chilled there, tiny crystals immediately start to form, centered on the rabbit hair, like minute beads on a string.

Their form and pattern can be controlled both by varying the amount and temperature of the warm, saturated air from below and by adjusting the temperature of the cold chamber at the top. The finely branched, lacy crystals that look like filigree jewelry result from sending up very moist air and chilling it only moderately. The plainer, straighter patterns are produced by more severe freezing of air that is not quite so moist. Sudden chilling of supersaturated air results in irregular masses of ice crystals or even round, sleet-like droplets.

This agrees rather well with theories based on field observations by meteorologists. It has long been the opinion of other weather scientists that the fine, lacy snow crystals form in the lower, moister air levels, while the plain, straight-sided ones are built from scantier supplies of moisture in the higher atmospheric strata where it is very cold.

In addition to "standard" six-pointed snow crystals, Prof. Nakaya is also able to produce the fine-pointed needles of rime, the clear little pellets of sleet, the curious white, sugar-like stuff that is known in Germany as graupel and in England as soft hail, as well as a number of other varieties of aerial ice.

His snowflakes are not always perfectly symmetrical. One-sided supplies of moisture, or one-sided electrical influences, he believes, may cause a snow-

flake to grow faster on one side than on the other. He says that asymmetrical snow crystals are a good deal more common in nature than most people believe. As a matter of fact, no snowflake is absolutely symmetrical; there are always at least small differences between sides and points.

Skilled as he is in producing synthetic snow crystals in his laboratory, Prof. Nakaya is equally skilled in making photographs of them and of the natural flakes that fall outside his windows. He has a collection of many thousands of photomicrographs which he has taken of his lovely perishable jewels of frozen water.

Photographing snow crystals is a job both delicate and difficult. They are so fragile that extreme care must be exercised in handling and arranging them on the glass slide or other background on which they are mounted for placing under the microscope.

The whole operation must be performed in the cold, and with microscope and all other apparatus just as cold as the snowflakes. The scientist-artist must hold his breath while he is focussing and adjusting, lest a whiff of his body heat crumple the delicate beauty like a fairy-tale princess caught in the breath of a dragon. In the austere rites of the snow-crystal laboratory, one spoken word might break the spell and bring destruction.

One American achieved wide recognition for taking snow photographs like the ones Prof. Nakaya is making. He has been dead for several years, but he left his monument behind him in a book of pictures edited by Dr. W. J. Humph-

reys of the U. S. Weather Bureau. His name was W. A. Bentley, and he was not a scientist but a New England farmer, who took up snow crystals for a hobby.

There is a difference between the photographic techniques used by the two men. Mr. Bentley carefully cut away all the emulsion on his plates except the parts occupied by the photographic images themselves. This left the crystals showing up boldly against a black background, like diamond brooches on velvet. Prof. Nakaya photographs his crystals against a white background, leaving his pictures in delicate white-and-gray.

Science News Letter, January 21, 1939

● Microfilm Documents

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- Copies of microfilm documents may be obtained from Bibliofilm Service, Care Library of the U. S. Department of Agriculture, Washington, D. C. (See SNL, March 5, 1938)

MEDICINE

Heart Disease Rarer Among Animals Than Men

HEART disease is much less frequent among domestic animals than it is among human beings, declare Dr. H. H. Dukes and H. T. Batt, veterinary surgeons on the Cornell University faculty.

Why this should be so is not definitely known, for the research program is as yet only in its opening stages. However, Dr. Dukes suggested several factors favoring lower incidence of heart disease among animals.

Animals are not addicted to excessive alcoholism, he pointed out; neither are they troubled with venereal diseases. They are not subjected to the same kinds of mental strains and worries that plague modern civilized man.

Above all, he continued, they do not usually grow old. A horse that is no longer able to work, a cow too old to give milk is usually killed. If aged animals generally were kept alive as long as possible, at the expense of their offspring or of the state, there might be more cardiac cases among them.

Dr. Dukes and his associates have also made extensive electrocardiographic studies on dogs and other domestic animals. They find that their heart action, like that of human beings, is stimulated by love, fear, anticipation and exercise.

Science News Letter, January 21, 1939

ETHNOLOGY

Roman Bride Wore White, But Styles Have Changed

WHAT the bride wore at a wedding in ancient Rome was never written up in a chatty society column.

But it is now reported by an archaeologist, Dr. Lillian M. Wilson, who has been studying the way Romans dressed in their statuary appearances, and delving into remarks of early historians on the subject of clothes.

Dr. Wilson has gone further. She has corralled young students and posed them in togas and tunics cut and draped in authentic Roman manner—to bring ancient fashions to life.

Result of this historic dressmaking is an archaeological report, "The Clothing of the Ancient Romans," brought out at the Johns Hopkins University, wherein Dr. Wilson tells what you may have suspected: that the toga was as inconvenient a costume as could have been devised. Nevertheless, she praises the toga as a beautiful style of dress.

We are told by Dr. Wilson that toga

styles changed. That a toga was considered the only proper dress for a Senator. That Romans had to be prodded into wearing togas by occasional Imperial decree. Frock coat of the Roman era, the toga was supposed to be worn on formal occasions by free-born Romans, even though workers wore tunics for everyday.

And the bride! The Roman bride wore white, but her gown was wool. Her girdle was tied with a Herculean knot. Wedding veil and shoes were deep orange gold.

For luck, the bride's tunic gown must be "woven upwards by those standing," in other words, on an old-fashioned loom.

The bride's hair offers an idea that modern beauty shops have somehow overlooked. It was plaited in six braids and bound around the head. And it was supposed to be parted with a sword! But there archaeology gives up. Exactly how or why the Romans, with very good combs, used a sword for hair-dressing on what must have been so excited an occasion, is hard to explain.

Science News Letter, January 21, 1939

ANTHROPOLOGY

Government Bans Voodoo, But Haiti Clings to Magic

GOVERNMENT efforts recently to stamp out the Voodoo cult in Haiti, by enforcing laws against it, have resulted only in reducing the ceremonies held publicly.

So the American Anthropological Association was informed when Dr. George E. Simpson, sociologist of Temple University, told of the power witch doctors and magic still hold over Haitian peasants.

Strong belief in magic has been economically ruinous to many peasants in Haiti, he declared. Some witch doctors charge nominal fees for treating sickness and foiling enemies of their customers. But when hounsans, as Voodoo witch doctors are called, are unscrupulous, they get what they can. Some Voodoo hounsans maintain impressive establishments, with assistants, pupils and servants.

Neurotic individuals may be helping to keep the Voodoo cult alive in Haiti, Dr. Simpson suspects. Some of the witch doctors who believe they are visited by African gods in dreams and given special powers, may be suffering from epilepsy, hysteria, and paranoia, he said, adding that the whole question needs medical investigation.

Science News Letter, January 21, 1939

IN SCIENCE

CHEMISTRY

Varnish Oil From Soybeans Discussed in Report

SOYBEAN oil treated chemically so that it will make a good varnish without the addition of other drying oils now becoming difficult to obtain is a new product of research by scientists of the Bureau of Chemistry and Soils described in a report to the Secretary of Agriculture by Dr. Henry G. Knight, chief of the bureau. Varnish manufacturers have shown considerable interest in the new product.

There is promise also of the development of a new plastic for molding purposes from soybean proteins. At present the only commercial protein molding plastics are made from casein, which require a prolonged hardening process. The soybean plastic, it is expected, will be ready for regular handling immediately upon being taken out of the mold.

Bagasse, or fibrous sugarcane waste, may become a new source of print paper, research results already completed indicate. Bagasse is already the material for a successful and widely marketed wall-board.

Among new food products described in the report by Dr. Knight are spice-flavored citrus butter from pulp now largely wasted, jellied grapefruit juice for use in salads, and a new type of refined sorgho sirup quite different from the dark, strong-tasting "sorghum" which many a middleaged man remembers on his boyhood griddle-cakes.

Science News Letter, January 21, 1939

TECHNOLOGY

Paper Gas Masks Are Introduced In Finland

GAS MASKS of paper have been successfully tested and introduced to the public in Finland.

The main portion of the mask consists of two sheets of kraft paper with a layer of bitumen in between. The kraft paper is cheaper than cloth and also more impenetrable to gases. Another variety of mask uses a cloth exterior and a kraft inner sheet. They do not, however, last as long as the standard cloth variety.

Science News Letter, January 21, 1939

NE FIELDS

BIOLOGY

Self-Sterility of Hybrids Caused By Special Genes

EXPLANATION for the notorious inability of hybrids to reproduce themselves is offered by Dr. Holger Klingstedt of the Zoological Institute. (*Nature*.)

There are special genes or hereditary factors that produce sterility, Dr. Klingstedt states. They are recessives; that is, they have to work in pairs to produce their result. In the reproductive cells of sterile hybrids they are so arranged that such pairing does take place, thereby preventing offspring.

Science News Letter, January 21, 1939

BOTANY

Plant Growth-Substances Discussed in New Book

SINCE the discovery, a few years ago, that roots can be induced to grow at will on any part of a plant simply through the application of certain chemicals, there has been, besides a good deal of regular commercial application, almost a craze of experimentation on the part of enthusiastic amateurs.

Several leading chemical companies have put the necessary compounds on the market, but a continuing handicap has been lack of suitable instructions in their use. This is now supplied in a compact book, entitled *Plant Growth-Substances*, written in England by Hugh Nicol and published in this country by The Chemical Publishing Company.

The first two chapters only are definitely dedicated to the layman. Chapter 1 tells in simple language what the substances are and the principles on which they operate. Chapter 2 tells how to use the commercial growth-substances in quickening the rooting of cuttings.

From there on, the book "goes technical" in the estimation of the author, although anyone with a moderately good understanding of the freshman course in chemistry can make pretty smooth sailing of it. In any case, many persons will undoubtedly consider the book worth buying for the first two short chapters alone.

Two growth-stimulating chemicals are recommended by the author. The first, phenyl-acetic acid, is by far the cheaper, but the second, indole-acetic acid, is decidedly the more potent and hence can be used in the most dilute solutions. Proportions ranging from 1 to 100 parts of the acid to 100,000 parts of water are recommended.

Treatment of cuttings to induce roots is simple. Immerse the bottom third of the cuttings in the solution, and remove successive thirds after 12, 24, and 36 to 72 hours, respectively. This will establish the most favorable timing for the particular species under experimentation.

Science News Letter, January 21, 1939

PUBLIC HEALTH

New Disease Discovered By Federal Health Service

A NEW infectious disease caused by Rocky Mountain wood ticks has been discovered by Drs. Gordon E. Davis and Herald R. Cox, bacteriologists of the U. S. Public Health Service. The first recognized human case was that of a member of the staff of the U. S. National Institute of Health. Describing this case in the Public Health Reports, Dr. R. E. Dyer of the federal health service suggests that the new and still unnamed ailment may be the same as "Q" fever, a disease that has been found in Australia, particularly among workers in abattoirs and among dairy farmers.

Gradual onset, mild fever with chills and recurrent sweating and "tender" finger joints are the symptoms reported from the single case of the new American ailment. The patient recovered in about one month. He contracted the ailment while observing research on it in the federal health service's Rocky Mountain spotted fever laboratory in Hamilton, Mont.

The ease with which the infection was picked up in the laboratory plus the fact that the infection occurs naturally in ticks suggests that there may have been other human cases and that the disease may even be widespread, although it has not been previously recognized.

The germ of the disease was discovered in ticks that were being examined for Rocky Mountain spotted fever. The new disease is not the same as Rocky Mountain spotted fever nor is it the same as Colorado tick fever. It can be given to guinea pigs, but no cases have as yet been observed occurring naturally in animals. Blood serum from the one human patient protected guinea pigs from the infection.

Science News Letter, January 21, 1939

AERONAUTICS

Double-Slotted Wing Flap Slows Landing Speed

DEVELOPMENT of a flap with double slots to increase the lift of an airplane's wings and thus make flying possible at slower speeds was reported to the Society of Automotive Engineers by Carl J. Wenzinger, of the National Advisory Committee for Aeronautics.

Aimed at helping airplanes to get off the ground more easily and to land at safer, lower speeds, the double-slotted flap is the most efficient of the many high-lift devices the government aeronautical research committee has yet investigated, Mr. Wenzinger declared.

At the same time, since it is retractable, it does not seriously increase the drag of the wings at high speed, a defect which has made useless many an otherwise efficient high-lift device.

Studies on the double-slotted flap are being conducted as part of a long-range research program at the N.A.C.A.'s laboratory at Langley Field, Va., to improve the airplane's wings' ability to carry loads. Ten years of research are behind Mr. Wenzinger and his associates; at least as many years, he said, still lie before them.

In commonest use at present is a single flap on the trailing edge, familiar to everyone who has watched speedy pursuit ships or great transports come in for a landing. The double-slotted flap is also fixed on the trailing edge.

Science News Letter, January 21, 1939

AERONAUTICS

Small Deflector Plate Gives Plane Greater Lift

A SMALL curved deflector plate placed on the leading edge of the familiar airplane wing slots that cuts a plane's landing speed and shortens its take-off run was described before the Society of Automotive Engineers by Richard C. Molloy of the United Aircraft Corporation and Roger W. Griswold, II, aerodynamic consultant.

The new device, tested on a small Fairchild airplane, represents another of aviation's attacks on the problem of designing planes to land more safely and to make existing airports adequate.

The deflector plate makes the slot more efficient in lifting the plane by making the airstream flow smoothly over the flap, the scientists explained. Marked improvement over planes equipped with ordinary slots was observed.

Science News Letter, January 21, 1939

AGRICULTURE

Super-Normal Granary

Plan for Storing Twelve-Billion-Dollar Reserve Of Foodstuffs and Fibers Is Proposed by Scientist

By DR. FRANK THONE

UNCLE SAM is stacking up things in his armory: a dozen tremendous new battleships, to carry 108 sixteen-inch guns, along with scores of new cruisers, destroyers, submarines and auxiliaries; 10,000 new airplanes and plenty of extra engines; the new semi-automatic Garand service rifle—a million or more of 'em; thousands of field pieces and machine guns; millions of shells, billions of cartridges. He hopes he'll never have to use any of 'em, but wants to be ready if he does have to.

Preparedness of this kind is good only for war. But there is another possible kind of preparedness that will be equally necessary if war comes, but which will also have its value in time of peace. It would consist of an immense hoard of food, fuel, clothing and building materials; it would be in effect a super-normal granary, to match the tremendous super-arsenal that the nation is in process of acquiring.

This super-normal granary has been proposed by Prof. R. B. Harvey of the University of Minnesota. Much bolder than the ever-normal granary proposal of Secretary of Agriculture Wallace, Prof. Harvey's scheme would pile up surpluses to a gross cash value of 12½ billion dollars. That would of course give economists the shivers, but the Minnesota scientist is thinking of human needs and uses rather than price indexes: he is a physiologist, not an economist.

Has Support

"A few years ago," Prof. Harvey says, "I advanced the idea for a national reserve. It got into the newspapers, and from the plans of the Department of Agriculture it seems to have some support.

"If we had a twelve billion dollar reserve of plant and animal products in long-time storage, deliberately set aside, it would be of more value than gold in emergencies of drought, war, and other plagues."

He points out that these reserves would be of particular usefulness in an emergency that would demand a wholesale shift of man-power out of produc-

tion, such as war would represent. In wars of the past and the present, women have to step into the places vacated by men in the field and at the factory bench. With their best efforts, and the labor of men not called for front-line duty, war-time production is still apt to fall behind that of the smoother schedules of peace. With a crammed national pantry at the outset, the nation would be in better shape in both materials and morale.

In Germany

Something of this kind has actually been going on in Germany, under the strict discipline of a totalitarian dictatorship. Nobody knows what the size of the Reich's reserve stocks are, but it is commonly reported that while German citizens have been getting along on *ersatz* butter and on eggs imported from China, the products of home agriculture have been going into cold storage in immense quantities. It is not at all likely that Naziland has been able to build up even an ever-normal granary, let alone a super-normal one, but just the fact that it is being attempted under heavy economic handicaps shows that the idea does not shock a group of administrators who have to think about the possibility of war at any time.

Nor does a nation have to be under totalitarian rule for the successful operation of a super-normal granary scheme. Switzerland, oldest of the world's democracies and apparently one of the most stable, is laying in food and fuel reserves. The only disagreements among the Swiss statesmen are over the question of where to put the stuff. One group favors boring tunnels deep into the granite of the Alps. The opposition would seal wheat and gasoline up in great tanks and sink them in deep water in Lake Geneva. Either way would seem safe.

Both the German and the Swiss experiments are, of course, being made under the spur of the fear of war. This is not without precedent. The principal method for long-time preservation of ordinary perishable foods, canning, was a war-baby a century and a quarter ago. For it was during the days of Napoleon,

when France and her conquered neighbors were under virtual siege for years on end, that French scientists evolved the method for keeping meats and vegetables in tinned cylinders that with some improvements evolved into the familiar tin cans of today.

Great warehouses stacked full of cases of canned goods would of course figure prominently in a national food hoard such as Prof. Harvey proposes. But canning would not by any means be the only preservation methods that would be used. We have learned some new tricks of the food preservation trade in the days since Napoleon's chemists tinkered with tins. There is the technique of dehydration, for example, the modern last word that makes "dried" fruits and vegetables obsolete. There is also quick-freezing, which has revolutionized preservation by cold.

One class of foods, however, needs no particular thought or effort to prepare them for long-time storage. The grains are prepared for such storage by the plants that grow them. All man needs to do is put them into containers that will keep out mice and other vermin and protect them from the weather, and they will attend to their own preservation for long periods—as much as fifty years, Prof. Harvey claims.

In Russia

"I saw the storage of grain in the dry region east of the Black Sea in Russia, where wheat and other cereals are kept in stone silos for many years," he states. "Evidently in this hot, dry climate, the growth of fungi is not a serious problem. We probably could do the same thing in the drier parts of the United States. In addition to this, we could apply the information we have on the use of such materials as ethylene dioxide and sulfur dioxide for preventing insect attack of dry materials. It is probable that a number of dried fruits and vegetables could be stored also in this manner."

Long-time storage of food products will have problems, however, even after the task of insuring their keeping without actual spoilage has been successfully completed. There is a more subtle spoilage, not due to weevils or mice or molds: the slow loss of quality and the deterioration of the vitamin content through their own internal physiology.

And since much of the nutritional value of stored foods depends on the retention of their vitamin potency this invisible leakage cannot safely be overlooked.

This problem is frankly faced by Prof. Harvey. He does not consider that we have a satisfactory answer to it as yet. That is one reason why he would have the government employ a corps of well-trained plant physiologists for a long-range program of research.

Welcomes Surplus

Piling up vast stocks of cotton, linen and other clothing materials, as well as national hoards of building materials and fuel, would present fewer problems, for these things do not spoil so readily as foodstuffs. Particularly is this true of cotton. Keep it dry and it will stay unchanged and in usable condition indefinitely. According to Prof. Harvey's way of looking at things, the present oversupply of cotton should be considered national good fortune rather than a near-calamity. It would be, but for a chronically jittery market.

Paradoxically, coal is a much less stable stuff than cotton, so far as long-time storage is concerned. Exposed to the air, it deteriorates through slow oxidation. Railroads, smelters, and other large users found that out long ago. They found out, too, that coal keeps much better under water. If coal is to be included in a scheme for a great national stock-pile, it may be a good thing literally to dump it into the lake, and dredge it up as needed.

We commonly think of wood storage in terms of lumber yards, with their great stacks of pungent-smelling boards. But as with coal, storage under air is not the best way of keeping lumber, for more than a few months. Besides the ever-present danger of fire, there is the tendency to dry out, crack and check, as well as the almost inevitable invasion by insects and fungi.

So in some parts of the country logs are kept in storage ponds and hauled out for preliminary drying only a short time before they are to be sawed. This practice is now being carried out on a large emergency scale in New England, to save as much as possible of the timber felled by last fall's hurricane.

Paradoxical as this way of storing wood may seem at first glance, it is no new thing under the sun. It was, indeed, a trick of nature long before man thought to imitate it: some of the best cypress logs are "mined" from the bottom of lakes and swamps in the South, where they have lain for centuries.

Prof. Harvey does not envision his proposal for a national super-normal granary as being of value only in case of war or other large-scale, nation-wide emergency. The stocks accumulated would necessarily be kept in many scattered population centers and would be available for use in regional or local emergencies. If vast forest fires should get out of control in the Northwest, if an earthquake should strike again as it did in San Francisco in 1906, if flood or hurricane should cut off cities in the Midwest or Southeast, there would need be no delay in issuing relief supplies, for they would be nearby and not at the wrong end of a long railway trip, as has too often happened in the past.

In one sense, this country has just been through an experience such as the super-normal granary would be designed to meet, only it was unforeseen, not planned for, and was met only through our fortunate ability to turn what seemed bad fortune into good.

Crop Reduction

When the present national administration came into power, there were enormous surpluses, disrupting the markets and bankrupting farmers and farm bankers, in wheat, corn, cotton, meat and several other commodities. To reduce these surpluses and get farm prices up again, crop reduction through acreage restrictions was planned as the big job of the new A.A.A.

But a force greater than any government agency intervened. Drought cut down farm yields, year after year, far more than the A.A.A. ever dreamed of or desired. The surpluses melted; they proved an invaluable cushion against the shock of shortage through natural causes.

Ever-Normal

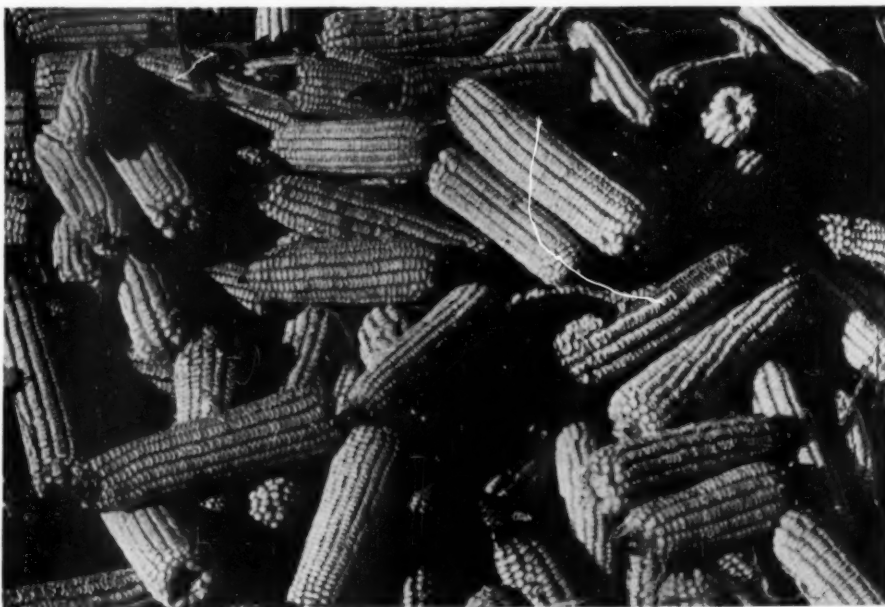
It was in an effort to harness a controlled surplus into national service that Secretary Wallace put forward his scheme for an ever-normal granary. But he undertook to carry out the idea only within the frame of existing economic conditions—inevitable, probably, for an administrator with large responsibilities but without unlimited powers.

But, asks Prof. Harvey, why let an economic set-up dictate to us? Everybody admits that having the national pantry filled, even over-stuffed, would be a mighty good thing—if it weren't for the perverse habit of the market, of slumping whenever that shows signs of happening. Admitting that it can't be done right now, what's the matter with seriously trying to find a way to accomplish this highly desirable end?

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Science News Letter, January 21, 1939

An electric-eye device linked with a buzzer is found effective to guard sleepwalkers.



POTENTIAL PORK

Well-dried corn is less expensive to store than meat or other animal products. Part of our food hoard might therefore consist of the yellow grain.

PHYSICS

Three-Dimensional Object in World of Two Dimensions

THE ELECTRON microscope is revealing new marvels in the strange films only a single molecule thick produced by scientists. These mono-molecular films have often been called a "two-dimensional world" because of their lack of thickness and because the intermolecular forces act only in two dimensions.

The newest finding, reported to the meeting of the American Physical Society in Washington, D. C., is that such two-dimensional films can produce a crystal structure with three dimensions.

The discovery, announced by Dr. L. H. Germer of the Bell Telephone Laboratories, is about like saying roughly that three-dimensional marbles had been found to exist in a flat sheet of paper.

Dr. Germer is the colleague of Dr. C. J. Davisson who was co-winner of the 1937 Nobel Prize in physics for his dis-

coveries of electron diffraction, a find which has made electron microscopes possible.

Thin films of many inorganic substances have been studied, Dr. Germer reported. They range, among the elements, from heavy gold to light beryllium. In many cases the amount of material evaporated into a film was so small that it could have produced a film only a single atom or molecule thick.

By shooting electrons through these films Dr. Germer obtained diffraction patterns which can be interpreted only on the basis that the film contains *three-dimensional crystals*. The italics are those of Dr. Germer's in his written report to the Society.

Content with reporting his astounding discovery, Dr. Germer left no hint as to how a two-dimensional world can contain a three-dimensional object.

Science News Letter, January 21, 1939

MEDICINE

U. S. Hopes To Be Independent In Morphine and Quinine

THE U. S. Public Health Service is taking steps to make the United States independent of outside sources of two of the world's most important drugs—quinine and morphine.

Efforts to do this by finding a way to make synthetic morphine and quinine or satisfactory substitutes for these two drugs will be started at the U. S. National Institute of Health early in 1939, the director, Dr. L. R. Thompson said. These plans for the Institute, which is part of the federal health service, were presented to the National Advisory Health Council.

The search for a synthetic morphine without habit-forming or addiction properties has been going on for nine years under the joint auspices of the U. S. Public Health Service and a committee of the National Institute of Health.

This line of research will be continued at the National Institute of Health, Dr. Thompson said, but in addition to looking for a non-habit-forming morphine,

the federal scientists will try to develop a chemical at least as good as morphine for controlling pain, even if it is also habit-forming, so that patients and physicians in the United States will be independent of morphine. The latter drug is made from opium which comes from the Orient.

Nothing has ever succeeded in completely replacing quinine for the treatment of malaria, Dr. Thompson has said, nor has anyone been able to make quinine from anything but the bark of the cinchona tree.

Although the world's first quinine came from the bark of cinchona trees in Peru, the world's supply now comes from Java and the Dutch have a monopoly on this supply. Atebrine and plasmochin have been used in malaria control work but are not universally accepted as completely satisfactory quinine substitutes.

The National Institute of Health will continue its investigation of the tuber-

culin test as a method of screening out tuberculous from non-tuberculous persons in large population groups, such as schools, Dr. Thompson said. There is at present a lack of correlation between tuberculin tests and X-ray findings and the Advisory Council was consulted on this problem.

Science News Letter, January 21, 1939

PHYSIOLOGY

Test Yourself for Queer Eye Illusion

ARE you one of the few people who appear to be endowed with unusual stereoscopic vision which will permit you to obtain the illusion of depth in viewing two identical pictures taken with a stereoscopic camera? Can you, to say it another way, obtain the illusion of depth in a picture which could be created with Grandma's stereoscope that delighted visitors to the parlors of the past?

For some months now the British science journal *Nature* has had comment after comment about this curious optical phenomenon of some human eyes. Perhaps you too are a human stereoscope. At any rate try out the following test as outlined by G. R. R. Bray of Knockholt, Kent, England.

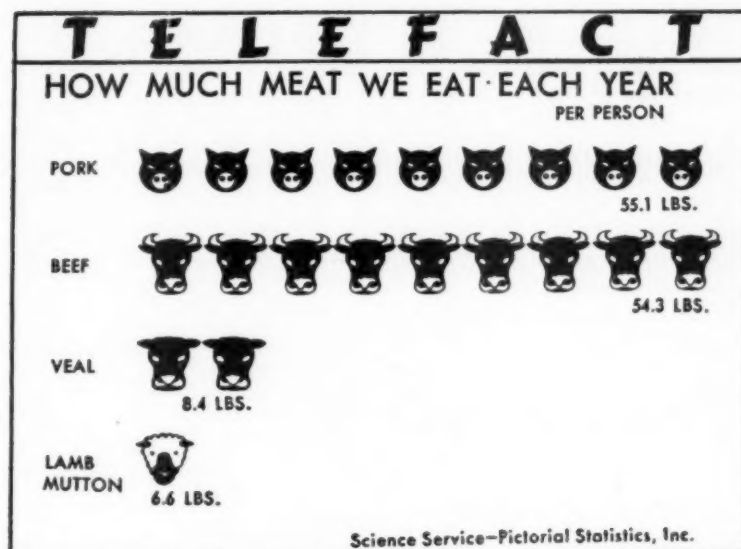
Set up two identical objects, say cubes or balls, about a foot apart and then step back about fifty feet. Most people with normal vision will see two objects.

But people with the unusual vision will see the two objects superimposed on one another if they can place them at some specific distance apart and view them from the proper distance. One foot apart and fifty feet distant merely happen to be the figures in Mr. Bray's own particular case.

The explanation seems to be that the eyes of such people tend to move their axes apart more readily than to converge from the normal angle for focused vision at medium distances. In Mr. Bray's case also a pair of stereoscopic photographs are easily seen in correct "perspective"—more easily than with a lens viewer in fact.

Persons with this type of vision may sometimes have experienced the queer unreality of seeing the pattern of a wall paper seem to become a semi-transparent object suspended in air and moving about with every movement of the observer. This strange happening has been known for about 200 years, states R. S. Creed of New College, Oxford, in reviewing the history of the binocular illusion.

Science News Letter, January 21, 1939



PUBLIC HEALTH

Health Service Officer Contracts Spotted Fever

Seventeenth on Roll of Martyrs Will Be Saved Because He Had Previously Been Vaccinated

SEVENTEENTH on the federal health service's roll of martyrs who have suffered deadly Rocky Mountain spotted fever in the line of duty is Dr. N. H. Topping, 30, now apparently recovering from the disease at Walter Reed Hospital, Washington, D. C.

Only the fact that he had previously been vaccinated against the infection is expected to save this young Public Health Service officer from death which claimed four of the other 17.

Dr. Topping contracted the disease from spotted fever infected ticks which he was studying at the National Institute of Health. When he was first taken sick, it was thought for a few days that he was suffering from the mysterious virus infection which public health service scientists have only recently discovered and which had already caused the illness of one of the officers. Dr. Topping had also been working with ticks infected with this new, unnamed virus. Appearance of the characteristic Rocky Mountain spotted fever rash, however, clinched the diagnosis.

Although Dr. Topping has been with the service only a few years, he has already shown great promise and aptitude for research, according to one of his sen-

ior officers, and is said to be "a hound for work."

Rocky Mountain spotted fever is a serious disease no matter how contracted, but the infections acquired in the laboratory are particularly severe. This, it was explained, is why the vaccine failed to protect Dr. Topping from developing the disease, although it is expected to save his life.

The four men of the federal health service who died of laboratory-acquired infections were Dr. Thomas B. McClintic, bacteriologist L. A. Kerlee, and laboratory assistants W. Gettinger and George H. Cowan.

Survivors, besides Dr. Topping, are: field assistants Martin L. Nolan, A. N. Chaffin, Frank O. Merritt and Dan Wil-ler; laboratory assistants Lawrence McNeal and W. T. Smith; laboratory attendants Nick Kramis, C. Buford Kaa, Harley Nicol and George Gordon; Philip Gillis, janitor; and H. Wixon, associate construction engineer.

Science News Letter, January 21, 1939

Flint was one of the first important materials in commerce, since prehistoric men traded for it and carried it considerable distances to make good stone weapons.

MATHEMATICS

New Kind of Space Year's Discovery in Mathematics

THE world around us is a four-dimensional universe of space-time: up and down, in front and behind us, to right and left, and the ticking of the clock. That is the physical universe as we experience it in everyday life.

But scientists, particularly the mathematicians, work and play with many other kinds of space, space of many dimensions, space that can not be visualized but must be expressed in terms of symbols and formulae.

The latest news in mathematical circles is that the French mathematician, André Weil, this year has introduced a new kind of space which he calls "uniform space." This is one of the great mathematical advances of the year.

Without making your mind tread among strange concepts and abstruse ideas for many hours, it will be difficult to know just what this means. Some idea of the importance of such mathematical spaces can be obtained from the fact that the geometry of space used by Einstein in his revolutionary theory of relativity was devised by Bernhard Riemann in 1854. Riemann's space of many dimensions, not just four, is the great-granddaddy of the spaces now intriguing mathematicians.

These include spaces of n -dimensions (many dimensions because n represents any number), spaces with infinitely many dimensions, vector spaces, metric spaces, many varieties of topological spaces, projective spaces, and scores of others.

The new space type, uniform space, is one in which "uniform continuity has a sense."

Uniform continuity may be explained as follows: A curve in the plane corresponds to an equation of the form $y=f(x)$, where $f(x)$ represents an expression in x ; a surface in space corresponds to an equation of the form $u=f(x,y)$ where $f(x,y)$ represents an expression in x and y . If for a certain value of x , a small variation in x involves a small variation in y , we say

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that $f(x)$ is continuous for that value of x . If by choosing the variation in x sufficiently small we can make the variation in y uniformly small throughout a range of values of x , we say that $f(x)$ and the corresponding graph $y=f(x)$ is uniformly continuous. An analogous statement covers the case of $u=f(x,y)$ and the corresponding surface.

Mathematicians, self-conscious of the difficulties of explaining these concepts, hardly expect the non-mathematician, or

even the ordinary mathematician, to keep up with the progress on the frontiers of these theoretical spaces.

What is important is that it be realized that it is important for these studies to continue. Out of them may come a decade or a century in the future some concept that will illumine the universe as glimpsed by the 200-inch telescope or the atom as created or smashed by the powerful cyclotron.

Science News Letter, January 21, 1939

AERONAUTICS

Controllable Pitch Propellers To Be of Wood and Plastic

Weight Saving of as Much as One-Third is Claimed; Are Built of Laminated Spruce with Plastic Cover

AERONAUTICAL engineering has a new prescription for the tough problem of what to do about propellers getting larger and heavier as engines and planes grow up. A new controllable pitch propeller made of wood and synthetic plastic.

Developed abroad, Schwarz-type propellers will be making their appearance on American airplanes shortly, the Society of Automotive Engineers learned from Fred E. Weick, of the Engineering and Research Corporation of Riverdale, Md.

Weight saving of as much as one-third in the larger propellers is possible, Mr. Weick, who is the inventor of the tri-cycle landing gear, told the society. About 40 of them, ranging in size from six to 16 feet in diameter, have already been built in this country. One of them, an 8-foot propeller, rated at 300 horsepower and weighing 41.5 pounds complete, has an approved type certificate issued by the Civil Aeronautics Authority.

The propeller blades are built of lami-

nated spruce and are protected by a plastic covering. The blades merge into a root of impregnated hard wood, which Mr. Weick calls compreg. The compreg root is screwed into a steel ferrule supporting the blade in the hub. The controllable pitch mechanism turns the steel ferrules.

Wood propellers ordinarily are not of the far more efficient controllable pitch type because of the impossibility of making movable wooden roots attached directly to the controlling mechanism. Because ordinary wood's shear strength is not high enough, screwing wooden roots into metal ferrules is not practical. But the impregnated wood overcomes this difficulty. A phenol-formaldehyde resin is used to impregnate sugar maple, beech, or birch to form the compreg.

Propeller development during the last few years has been characterized, among other things, by repeated predictions that increasing weights would set a limit to propeller size, as more and more of the engine's power would be required in

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accelerating the propeller, let alone developing a thrust to pull the plane through the air. But aeronautical engineers have developed several methods, of which this is the newest in the United States, of saving weight and pushing the theoretical limit further back.

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LANGUAGE

Name Jehovah Derived From "To Be Kindly"

THE NAME Jehovah, or Yahveh, in the Old Testament, much debated by scholars, is declared to be derived from a Semitic language root meaning "to be kindly."

Speaking before the annual meeting of the Society of Biblical Literature and Exegesis, Dr. R. Marcus of Columbia University expressed doubt that the Hebrew divine name—written without vowels Yhwh—came from verbal root hwy, conveying the idea of a deity creating and controlling the elements.

The original form, he argued, was Yawiy, which later by confusion with the root hwy was pronounced Yahweh.

Reporting a study of Jewish writers' books on Jesus Christ, Dr. E. S. Tanner of the University of Tulsa said that "the estimation of Jesus by post-war Jewish writers is generally more favorable than for centuries."

Jewish writers' interpretations of Jesus range all the way from "negative evaluations," Dr. Tanner finds, to views equal to those of liberal Christians.

The contemporary writings on Old Testament events unearthed at ruins of Lachish in Palestine were discussed by Dr. A. Sperber of the Jewish Theological Seminary, who finds in them good evidence for his theory that two dialects of Hebrew were spoken in Bible days. The southern and northern dialects, used respectively in Judah and in Israel, can be detected, he said, by study of inscriptions and also parallel passages in Old Testament books.

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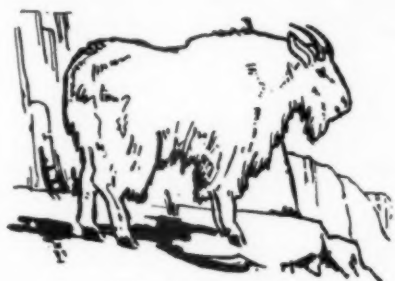
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"Just Scenery"

"IS THERE anything in that place, or is it just scenery?" a tourist of the see-it-quick-and-hurry-on type once asked a young ranger behind the information desk in a National Park.

The young ranger was diplomatic. He sized up his interrogator. "Just scenery," he told the hurried one. "I think you can skip that part of this park."

When the U. S. National Park Service was first organized, the distinction was not so very clear between the awe-inspiring, crowd-drawing spectacles in the Parks—geysers, glaciers, canyons, giant trees and so on—and the "just scenery" areas which attract fewer visitors but hold these longer and more firmly.

Now, however, the distinction is clearly seen and is being acted upon. It is a definite part of the National Parks policy to set aside certain areas, chosen so far as possible for their untouched primitive conditions, as "wilderness parks." In these, roadbuilding is to be kept down to a minimum set by absolute necessity, there are to be no big hotels, and no effort is to be made to make life easy for visitors. They are for the hiker, the horseback trail rider, the fisherman, the observing naturalist.

In a few of the Western parks, where there is plenty of room, such areas can be included without interfering with normal tourist traffic. In the Yellowstone, for instance, hundreds of thousands of visitors behold and wonder at Old Faithful, and the Canyon, and the Mammoth Hot Springs. Yet there are tens of thousands of acres in that park so dedicated to solitude that even the rangers do not enter them except when a lightning stroke starts a forest fire.

The movement now on foot would set aside such regions as Isle Royale in Lake Michigan and the newly created

Olympic National Park in Washington, to be wholly "wilderness parks"; where the price of seeing "just scenery" is, in part at least, the ability to get to the vantage-points on your own two feet.

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SURGERY

Service Urged to Prevent Unnecessary Surgery

TO PREVENT unnecessary surgical operations, which are said to be "not uncommon in this country," Dr. J. J. Golub, director of the Hospital for Joint Diseases, New York City, and commissioner of the Saratoga Springs Authority of the State of New York, urges establishment of regional consultation boards to "serve all persons, regardless of income or status, who are advised to submit to surgical operation."

Details of the plan and the reasons why, in Dr. Golub's opinion, it is necessary have been presented to the American Hospital Association. (*Hospitals*, Oct.-Nov.-Dec.)

The service could be operated on a voluntary plan by local medical societies or under city government by the department of hospitals. Competent physicians and surgeons would consult with the patient's physician or surgeon, examine the patient, review the history and have laboratory tests made if necessary. Decision of a majority would rule, although of course the patient's consent would be required before operation.

Total cost of the service for the city of New York, Dr. Golub estimates, would be about \$2,000,000 a year, at \$5 for each consultation. The service could be paid for by tax funds and furnished free of charge to all persons or it might be furnished on a graded fee basis from nothing to \$10, or included in hospital service association arrangements.

Besides the service to the patient, Dr. Golub believes there would be advantages to the physicians and surgeons in providing graduate education and opening a new field of gainful part-time employment for many qualified physicians.

About 8,000,000 major and minor surgical operations are performed each year in this country by from 30,000 to 40,000 practitioners, Dr. Golub stated.

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Photography

PHOTOGRAPHY OF THE FIGURE IN COLOUR AND MONOCHROME—Charles Simpson—*Amer. Photographic Pub. Co.*, 208 p., 102 plates, figures, \$5. This book of British origin is intended for photographers who are particularly interested in the artistic portrayal of the human form. Chapters on child snapshots and character studies will be of wide interest.

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Regional Study

YOUR COMMUNITY: Its Provision for Health, Education, Safety and Welfare—Joanna C. Colcord—*Russell Sage Foundation*, 249 p., 85 c. This is a sort of intelligence test for the place where you live, a specification for desirable surroundings. It is so arranged that you can actually apply it to your own community. The material on health will be especially interesting in view of the ferment on this subject. Plenty of practical references.

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Archaeology

THE CLOTHING OF THE ANCIENT ROMANS—Lillian M. Wilson—*Johns Hopkins*, 178 p., illus., \$5. See page 40.

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Plant Physiology

PLANT GROWTH SUBSTANCES—Hugh Nicol—*Chemical Pub. Co.*, 108 p., illus., \$2. See page 41.

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Botany

BOTANIC GARDENS OF THE WORLD; MATERIALS FOR A HISTORY (2d ed.)—*Brooklyn Botanic Garden*, 406 p., \$2.50. *Brooklyn Botanic Garden Record*, Vol. XXVII, No. 3, July, 1938.

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Economics—History

THE BIRTH OF THE OIL INDUSTRY—Paul H. Giddens—*Macmillan*, 216 p., \$3. This volume, with an introduction by Ida M. Tarbell, tells the story of one of America's giant industries—from Father Joseph de la Roche d'Allion's

observation of petroleum in 1627 down to the beginning of the kerosene age, when petroleum really became Big Business. Prof. Giddens has drawn in colorful fashion a portrait based on many new materials.

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Philosophy

PATTERNS OF SURVIVAL: AN ANATOMY OF LIFE—John Hodgdon Bradley—*Macmillan*, 223 p., \$2.25. Life is analyzed as a strange experiment. Dr. Bradley breaks through the artificial barriers between geology, paleontology, biology, anthropology, and philosophy to search for basic principles.

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General Science

MAN AND HIS LIFE BELTS—Eric T. Bell—*Williams and Wilkins and Reynal and Hitchcock*, 340 p., \$3. Dr. Bell with the logic of a mathematician and the flair of a novelist analyzes the "lifebelt" theories of life, conduct and action—various religions, democracy, the industrial revolution, Marxism, economics, education, psychology, science, with combinations and variations.

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Engineering—Sociology

AMERICAN PLANNING AND CIVIC ANNUAL—Harlean James, editor—*American Planning and Civic Association*, 346 p., \$3. A record of recent civic advance as shown in the proceedings of several conferences on national and state parks and on state, city and rural planning.

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Exploration

ALONE—Richard E. Byrd—*Putnam*, 296 p., \$2.50. The personal experiences of Admiral Byrd when he was completely isolated in the South Polar night. It is an epic of modern exploration.

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General Science

HOW TO ORGANIZE A SCIENCE CLUB—*The American Institute of the City of New York*, 35 p., 25 c. Good practical advice to those who want to help the rising generation find its own way into science as a useful and enlightening hobby.

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Philosophy

SCIENTISTS ARE HUMAN—David Lindsay Watson—*Watts & Co., London*, 249 p., 7 s. 6 d. The thesis of this book cannot be better summarized in a sentence than in the words of Prof. John Dewey, who contributed the Foreword: "He shows . . . that the prevalence of mechanical modes of social organization has produced not merely mechanistic philosophies—a relatively minor matter—but a mechanism in the mind of the inquirer which stands in the way of the manifestation of his whole personality in the scientific work he does—a major matter."

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General Science

INVENTORY: AN APPRAISAL OF RESULTS OF THE WORKS PROGRESS ADMINISTRATION—*Works Progress Administration*, 100 p., illus., 30c. Beautifully designed and produced, this report to the American people touches science, in its broad aspects, in the sections on aviation, historic shrines, education, health, libraries, conservation, historical surveys and records, science and research.

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Religion—General Science

FRANCISCAN ALMANAC, 1939—*St. Anthony's Guild Press*, 695 p., 75 c. Useful as presenting a Catholic viewpoint on various scientific subjects.

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SCIENCE IN A TAVERN—Charles S. Slichter—*Univ. of Wisconsin Press*, 186 p., \$3. Essays by Wisconsin's Dean Slichter, some with delightful historical content like that concerned with the Royal Society Club.

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